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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/592,943	09/15/2006	Hitoshi Saomoto	062998	8662
38834 7590 02/13/2008 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036				
EXAMINER CARTER, MICHAEL W				
ART UNIT 2828		PAPER NUMBER		
MAIL DATE 02/13/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/592,943

**Applicant(s)**

SAOMOTO ET AL.

**Examiner**

MICHAEL CARTER

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-08)  
Paper No(s)/Mail Date 9/15/06 12/7/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-8** are rejected under 35 U.S.C. 102(b) as being anticipated by Mazed, US Patent 6,411,642 (hereinafter referred to as Mazed).

3. **For claim 1**, Mazed teaches a semiconductor laser element comprising: a plurality of ridges arranged in parallel with each other (figure 1a, labels 10b, and 10c) inside a pair of first supports protecting said ridges; and a second support provided between said plurality of ridges and protecting said ridges (figure 1a, labels 27a and 27b).

4. **For claim 2**, Mazed teaches said second support is provided corresponding to each ridge (two supports 10b and c).

5. **For claims 3-4**, Mazed teaches monitor region provided to an outermost edge of said semiconductor laser element to monitor progress of etching wherein said monitor region serves as an isolation groove to isolate said semiconductor laser element (figure 1a, label 17 and column 5, lines 7-11).

6. **For claims 5-8**, Mazed teaches wherein a distance from a center of said ridge to ends of said first and second supports on sides thereof facing said ridge is set within a range from more than 20  $\mu\text{m}$  to less than 50  $\mu\text{m}$ ; from more than 20  $\mu\text{m}$  to 40  $\mu\text{m}$  or

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less; from more than 20  $\mu\text{m}$  to 33  $\mu\text{m}$  or less; from 30  $\mu\text{m}$  or more to 33  $\mu\text{m}$  or less, respectively (figure 1c).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 9-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazed in view of Spear, US Patent 6,075,800 (hereinafter referred to as Spear).

9. **For claims 9-12**, Mazed does not explicitly teach the ratios of areas and widths of the supports.

However, Spear teaches the supports are used to provide a thermal conduction path as well as mechanical stability between the chips and substrate (column 4, lines .

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to adjust the size of the supports in order provide sufficient thermal conduction as well as mechanical stability since a change in size is generally considered within the ordinary skill in the art.

*Note that it is well know in the art to increase contact area in order to improve heat radiation characteristics. See, for example, US PG Pub 2002/0024985 paragraph 23.*

10. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Spear, in view of Mazed, and further in view of Mitsuhashi, US Patent 6,199,561 (hereinafter referred to as Mitsuhashi).

11. **For claim 13**, Spear teaches providing a ridge (figure 1, label 14) sandwiched between supports (figure 1, portions on either side of ridge), providing a block layer on surfaces of said supports (figure 1, label 16), and providing an electrode layer covering said ridges (figure 1, label 15).

Spear does not teach arranging a plurality of ridges in parallel with each other; and providing a block layer on surfaces of said ridges; applying a protective film by spin coating to a surface of said block layer; removing said protective film covering a top surface of said ridges; removing said block layer covering the top surface of said ridges with said protective film serving as a mask.

However, Mazed does teach arranging a plurality of ridges in parallel with each other (figure 1a); and providing a block layer on surfaces of said ridges (figure 6a, label 270); removing said block layer covering the top surface of said ridges (figure 6f, label 275 and column 13, lines 1-5) in order to fabricate a multi-wavelength laser.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Mazed steps with Spear in order to fabricate a multi-wavelength laser.

Mazed does not detail that the patterning (column 13, line 2) includes applying a protective film by spin coating to a surface of said block layer; removing said protective film covering a top surface of said ridges; with said protective film serving as a mask.

However Mitsuhashi teaches the steps of applying a protective film by spin coating to a surface of said block layer; removing said protective film covering a top surface of said ridges; with said protective film serving as a mask are well known in the art for producing semiconductor devices (column 1, lines 14-24).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use Mitsuhashi method of patterning for the patterning required in the method of the previous combination.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Carter whose telephone number is (571) 270-1872. The examiner can normally be reached on Monday-Friday, 7:00 a.m.-4:30 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call  
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MC/

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828